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Sir:

Transmitted herewith for filing is the patent application of

Inventor(s):   **Eric Sven Hellman and Richard Miles Poindexter**

For: **RETRIEVAL OF DIGITAL OBJECTS BY REDIRECTION OF CONTROLLED VOCABULARY SEARCHES**

Enclosed are:

☐   This is a request for filing a ☐ continuation ☐ divisional application under 37 CFR 1.53(b), of pending prior application serial no. _____ filed on _____ entitled _____.

☒   __11___ pages of specification, _5___ pages of claims, _1___ pages of abstract.

☒   __7_____ sheets of drawings.

☒   A Declaration, Petition and Power of Attorney.

☒   An assignment of the invention to __Openly Informatics, Inc._____. A recordation form cover sheet (Form PTO 1595) is also enclosed.

☐   A verified statement to establish small entity status under 37 C.F.R. 1.9 and 37 C.F.R. 1.27.

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INDEP. CLAIMS	6 - 3	= 3	x 39	$	OR	x 78	$ 234
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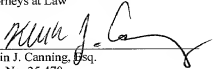   ☐   Any filing fees under 37 C.F.R. 1.16 for presentation of extra claims.

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RETRIEVAL OF DIGITAL OBJECTS BY
REDIRECTION OF CONTROLLED VOCABULARY SEARCHES

<u>Technical Field</u>

5

The present invention relates generally to data processing systems and more particularly to the retrieval of digital objects by redirection of controlled vocabulary searches.

10 <u>Background of the Invention</u>

Services for providing digital content may generally be classified into two categories: subscription-based or non-subscription-based. With subscription-based services, the user must first subscribe to the service, which often entails payment of a
15 subscription fee or payment on a per use basis. The content provided by subscription-based services may vary and may include contents such as journal articles, databases, financial information and the like.

Non-subscription-based services do not require that a user have a subscription in
20 order to access information provided by the service. Search engines, such as those provided by Yahoo and Netscape, are examples of non-subscription based services. A user may submit a request to the search engine and receive search results that contain a number of hyperlinks to content available on the Internet without having a subscription.

25 One current difficulty facing users is that content provided by subscription-based services and content provided by non-subscription based services are distinct and must be queried separately. For example, if a user is interested in information about astronauts, the user must first submit a query to the subscription-based service to obtain search results. Subsequently, the user must submit a separate query to the non-
30 subscription-based service.

Another difficulty concerns hyperlinks within documents. A hyperlink within a document works well so long as the reader of the document has access to the content referenced by the hyperlink. Difficulties may arise where the hyperlink references
35 content that is not accessible to the reader. In many instances, the hyperlink refers purely to content that is freely accessible and, thus, is unduly limiting in its scope.

Summary of the Invention

The present invention provides a mechanism for a hyperlink to be resolved based on user preference to retrieve digital objects. For example, a hyperlink may reference
5   documents regarding Thomas Edison. If the user that clicks on the hyperlink has access to both subscription-based services and non-subscription based services, the user determines which of the services is to be used in resolving the hyperlink to one or more resources. On the other hand, where a user does not subscribe to a subscription-based service, the hyperlink may be resolved by non-subscription-based services when the user
10 clicks on the hyperlink. Thus, in one embodiment, the present invention provides a mechanism for resolving a hyperlink to one or more resources based upon user preference. This enables a hyperlink to be resolved differently based upon whether the user has access to subscription-based services and/or non-subscription-based services.

15   In one embodiment, the present invention provides a controlled vocabulary that is used to specify a unique variety of hyperlink. The hyperlink contains a uniform resource locator (URL). The URL is not for a service provided to resolve the hyperlink, but rather refers to a hyperlink redirection facility. The hyperlink redirection facility contains information regarding user preferences for resolution services. Alternatively,
20 the hyperlink redirection facility may query the user for preferred resolution service. The hyperlink redirection facility redirects link information and user information to a service provider facility in accordance with user preference. The service provider receives the user information and the link information and directs the information to a service provider that provides resources, such as search results. The resources are then
25 returned to the user by the service provider.

In accordance with one aspect of the present invention, a method is practiced in an environment that has a redirection facility. In accordance with this method, a user requests to access information regarding a semantic value that is associated with a
30 hyperlink. The semantic value is a value that pertains to the meaning of the hyperlink. The semantic value may take different forms, such as a keyword, descriptive term, or identifier, a database key or other value associated with the hyperlink. The request is received at the redirection facility. A user preference is identified regarding which service provider to use to service the request. Based on the user preference, the request
35 is directed from the redirection facility to a service provider for servicing the request.

In accordance with a further aspect of the present invention, user information regarding a user and link information regarding a hyperlink to be resolved to a resource in response to the user selecting the hyperlink are received in an electronic device. A resolution service is identified for employment to resolve the hyperlink based on the

5   user information. At least some of the link information is forwarded to the identified resolution service for resolution of the hyperlink.

In accordance with an additional aspect of the present invention, a request for a resource is received in a computer system. The request originates from a user selecting

10   a hyperlink, and the request is redirected to the computer system by an intermediary. The request is translated into a format that is acceptable to the computer system and the request is serviced by returning a resource to the user.

In accordance with a further aspect of the present invention, a search query is

15   received that originates from a user. Where the user subscribes to a service that provides access only to subscribers, a search is conducted in accordance with a search query on the content that is accessed via the service. The results of the search are returned to the user.

20   In accordance with a still further aspect of the present invention, a method of advertising is practiced in an environment that has a redirection facility for redirecting a selected request from a requestor for a given resource to a service provider. The selected request is received at the redirection facility. A criterion is examined, and based on the examined criterion, a determination is made whether to present an

25   advertisement to the requestor.

Brief Description of the Drawings

An illustrative embodiment of the present invention will be described below

30   relative to the following drawings.

FIGURE 1 is a block diagram illustrating components and data flow in the illustrative embodiment of the present invention.

35   FIGURE 2 is a flow chart that provides an overview of the steps performed in the illustrative embodiment.

FIGURE 3 depicts an example of an HTML document used in the illustrative embodiment.

FIGURE 4 illustrates data flow between the user web browser and a hyperlink
5   redirection facility.

FIGURE 5 depicts an example of a request enhancement facility.

FIGURE 6 illustrates the steps that are performed when a service provider does
10   not have any content to provide to a user.

FIGURE 7 is a flow chart illustrating steps that are performed in accordance with an advertisement method of the illustrative embodiment of the present invention.

15   Detailed Description of the Invention

The illustrative embodiment provides a unique approach to resolving hyperlinks. The illustrative embodiment uses three major components in the resolution of hyperlinks. These three major components are a controlled-vocabulary abstract
20   hyperlink, a hyperlink redirection facility and a translation facility for directing a request originating from selection of the hyperlink to a service provider. The controlled vocabulary abstract hyperlink is constructed using a controlled vocabulary and contains a URL that directs a request resulting from the selection of the hyperlink to a hyperlink redirection facility. The hyperlink redirection facility receives the request along with
25   cookies containing information regarding the user and determines where to redirect the request. The hyperlink redirection facility may maintain information regarding user preferences for which services to use in resolving a hyperlink. The hyperlink redirection facility then passes a controlled vocabulary abstract hyperlink to the user for forwarding to a service provider. The controlled vocabulary abstract hyperlink is a structured
30   information request. The service provider receives the controlled vocabulary abstract hyperlink and translates the request into a format suitable for the selected service provider via a translation facility. The service provider then forwards the translated request to the selected service, which returns a resource, such as a web page containing search results to the user.
35

The illustrative embodiment exploits both link abstraction and link indirection. The illustrative embodiment exploits link abstraction in that a link refers to an abstract

grouping of resources. For illustrative purposes in the discussion below, it is presumed that the link is for a search. The search can return documents that did not exist at the time that a hyperlink was authored. The illustrative embodiment uses controlled vocabulary link construction such that a particular data object may be assembled in specified ways using formula and algorithms. The illustrative embodiment uses link indirection in that the link initially points to the hyperlink redirection facility and then is redirected to a service provider.

In some instances, the service provider to which the hyperlink redirection facility passes the request may not have content to return to the user. In such a case, the illustrative embodiment identifies a next service provider to use and submits the request to the next service provider. This helps to ensure that the user is provided meaningful and useful results from the request.

The illustrative embodiment may also entail an advertising method. The hyperlink redirection facility may determine a number of times that a given user has requested resources. At periodic intervals, the hyperlink redirection facility may present an advertisement to the user. Moreover, the advertisement may change depending upon the number of times the advertisement has been presented to the user. The advertisement may be chosen based on a random criterion, the target service provider, the date that an advertisement was last sent to the user or other criteria. The advertisement may be presented to the user by presenting a web page containing the advertisement. The advertisement may include both video content and audio content.

The illustrative embodiment provides a powerful tool for the use of hypertext. A single hyperlink may be resolved in two different fashions for different users. The hyperlink may be resolved to subscription-based services as well as non-subscription-based services. Moreover, the hyperlink may be resolved based on user preference.

The illustrative embodiment facilitates change without requiring the modification of a hyperlink. The abstract link contained within a document need not be updated rather the hyperlink redirection facility and service provider may modify the resolution of the link to a concrete link.

Figure 1 depicts a block diagram of components in the illustrative embodiment of the present invention. The information service publisher 10 provides a document 12 that includes a controlled vocabulary abstract hyperlink 14 ("Link" in Figure 1). The

controlled vocabulary abstract hyperlink 14 is the special variety of hyperlink used in the illustrative embodiment. The information service publisher 10 may be any of a number of different publishers that provides digital objects that are accessible via a network, such as the Internet, an intranet, an extranet or other type of network.

5   Although the controlled vocabulary abstract hyperlink 14 is depicted in Figure 1 as being part of a document 12, those skilled in the art will appreciate that more generally, there is just the need for the controlled vocabulary abstract hyperlink 14 to be embedded in some form of content. A user 16 accesses the document and may select the controlled vocabulary abstract hyperlink 14 by directing a mouse cursor to point at the controlled

10   vocabulary abstract hyperlink and clicking a button on the mouse. The user 16 is presumed to have a computer system or other electronic device that allows the user access to the document 12. The user has a connection with a hyperlink redirection facility 22.

15   The hyperlink redirection facility 22 is an intermediary redirection facility that may be implemented in software on a computer system or other electronic device. The device may support the TCP/IP protocol suite and may be part of a network, including but not limited to the Internet, an intranet or an extranet. The hyperlink redirection facility 22 may run on a dedicated server, such as a web server 22. Those skilled in the

20   art will appreciate that multiple hyperlink redirection facilities may be present in a system for practicing the present invention. For example, multiple hyperlink redirection facilities may be operating in parallel. Moreover, multiple hyperlink redirection facilities may be found where a service provider uses such a facility in resolving an abstract hyperlink. Other configurations with multiple hyperlink redirection facilities

25   are also possible. For purposes of simplicity, only a single hyperlink redirection facility 22 is depicted in Figure 1. A service provider 26 serves as the "front end" for receiving requests, translating requests, and passing the request onto services 28. The service provider may be something as simple as a web site. The service provider may run as a facility on a dedicated server. The remaining components depicted in Figure 1, will be

30   described in more detail below relative to discussion of the flow chart of Figure 2.

          Figure 2 provides an overview of the steps performed in the illustrative embodiment of the present invention to resolve a hyperlink. Initially, the information service publisher 10 provides a document 12 that contains a controlled vocabulary

35   abstract hyperlink 14 (step 40 in Figure 2). The illustrative embodiment requires that the controlled vocabulary abstract hyperlink 14 be specified in accordance with a schema or controlled vocabulary that describes information items. In order to appreciate

the controlled vocabulary that is employed in the illustrative embodiment, it is helpful to consider an example. Suppose that an Internet publisher imbeds a controlled vocabulary abstract hyperlink 14 which specifies a search for information related to an author names "Wendy Jones." The controlled vocabulary uses the "Genre," "author," and person name "Wendy Jones." The URL contained within the controlled vocabulary abstract hyperlink 14 points to a hyperlink redirection facility. The controlled vocabulary are meta data is used by the hyperlink redirection facility as will be described in more detail below.

The information service publisher 10 may, for example, place the document 12 on a web server that is accessible to a user 16 that runs a web browser. The user web browser displays the document 12 on a display device, such as a video display (step 42 I Figure 2). The user 16 then selects the controlled vocabulary abstract hyperlink 14 (step 44 in Figure 2). As mentioned above, the user 16 may select the controlled vocabulary abstract hyperlink 14 by positioning a mouse cursor to point at the link within the then document 12 and then clicking a mouse button. Those skilled in the art will appreciate that there may be other mechanisms for selecting the controlled vocabulary abstract hyperlink 14.

A controlled vocabulary abstract hyperlink 14 is then passed to the hyperlink redirection facility 22. This differs from conventional systems in that when a hyperlink is selected in a conventional system, an HTTP request is sent to the designated URL for resolution. The controlled vocabulary abstract hyperlink 14 contains meta data and a URL that points to the hyperlink redirection facility 22. Figure 3 depicts an example hypertext markup language (HTML) document that contains a controlled vocabulary abstract hyperlink 14. The document 12 contains the typical tags found in an HTML document, including a <HTML> tag pair, a <head> tag pair, a <title> tag pair and a <body> tag pair. The controlled vocabulary abstract hyperlink 14 is specified as shown on lines 60 and 62 as a hyperlink that contains a URL for the hyperlink redirection facility 22. For the example depicted in Figure 3, it is presumed that the controlled vocabulary abstract hyperlink is for a portion of hypertext that identifies a stock ticker symbol "RHAT".

One or more cookies 20 are sent from the user web browser (see 16 in Figure 1) to the hyperlink redirection facility 22 (step 48 in Figure 2). The cookies are data structures that hold context information. In the present context, the term "cookie" refers to a structure as defined in the cookie specification developed by the HTTP working

Group of the Internet Engineering Task Force (IETF) in RFC 2109. The cookies 20 may contain user information and link information. The user information may include information regarding the user and the user preferences regarding resolution services to use in resolving the controlled vocabulary abstract hyperlink 14. The cookies 20 may

5   also contain information regarding the number of times that the user has submitted a request to the hyperlink redirection facility 22. The user 16 has submitted a request to the hyperlink redirection facility 22. Figure 4 shows an example. The user web browser 64 sends a first cookie 66 that identifies that the user would like to use Netscape NetCenter to resolve the controlled vocabulary abstract hyperlink 14. Resolution entails

10   providing resources in response to a request to get resources at a specified URL. The user web browser 64 also sends a second cookie 68 that contains information regarding the number of times that the user has submitted a request to the hyperlink redirection facility 22. In the example depicted in Figure 4, the user has submitted seven requests to the hyperlink redirection facility 22. As will be described in more detail below, the

15   information regarding the number of times the user has submitted requests to the hyperlink redirection facility 22 may be used to guide handling of the controlled vocabulary abstract hyperlink 14 and to determine whether to provide advertising to the user.

20   The hyperlink redirection facility 22 identifies a resolution service to use in servicing the requests associated with the controlled vocabulary abstract hyperlink 14 (step 50 in Figure 2). The resolution service may be identified within the cookies, such as cookie 66 in Figure 4 or may be identified in a database 24 that contains information regarding user preferences. The user preferences may be prioritized or may contain

25   multiple resolution services in some instances.

          The hyperlink redirection facility 22 then redirects the URL (see 70 in Figure 4) for the appropriate resolution service or services to the identified resolution service or services (step 52 in Figure 2). As shown in Figure 1, the URL 70 is passed back to the

30   user web browser. Figure 4 shows an example wherein a URL is returned for submitting a stock ticker quote request for RHAT from the Netscape NetCenter service.

          The user web browser sends the controlled vocabulary abstract hyperlink 14 to the resolution service, i.e. the service provider 26 (step 54 in Figure 2). The service

35   provider 26 provides a framework in which a service, such as a library, can make information services available to customers based on links to information items. The service provider 26 receives a structured information request in the form of a controlled

vocabulary abstract hyperlink 14 and responds with requested information. The response may take many forms and may take the form of URL 30 as shown in Figure 1. The service provider 26 uses templates to construct the URL that is passed back to the user browser. The URL strings are formed by filling in blanks in templates. For
5   example, consider a journal article with a web site at http://www.publisher.com/. This journal has articles that have URLs based on volume and page such as shown in Table 1.

Volume	Start Page	URL
3	25	http://www.publisher.com/003/25/
10	485	http://www.publisher.com/010/485/

The template is as follows.

10

```
<?xml version="1.0">
<!DOCTYPE S-Link-S SYSTEM "S-Link-S.dtd">
<S-Link-S ID="example">
<URL>http://www.publisher.com/<pad padChar="0" length="3">&volume;</pad>/&startpage;/</URL>
</S-Link-S>
```

For the example template document, "&startPage;" and "&volume;" are placeholders or blanks for the starting page number and the volume number, respectively. These placeholders are filled in with actual values to create a URL. The
15   "<pad>" tag indicates that padding 0's need to be added to make fixed-length strings. The service provider 26 has templates available and uses the meta data passed from the controlled vocabulary abstract hyperlink 14 to construct the URL that is returned.

In some instances it may be useful to add additional information to the controlled
20   vocabulary abstract hyperlink 14 so as to enhance the results that are returned by a service provider 26. A request enhancement facility 90 (Figure 5) serves the function of embellishing the controlled vocabulary abstract hyperlinks. As shown in the example in Figure 6, the request enhancement facility 90 may add information from the user cookie 92, another controlled vocabulary abstract hyperlink 94, source Material 96 or
25   knowledge databases 98 for inclusion in the controlled vocabulary abstract hyperlink 14. One example of the use of a request enhancement facility 90 is the inclusion of ISSN numbers. Although an ISSN number is not particularly interesting to a user, a ISSN number may greatly enhance the nature of a query that is submitted.

30   In the above-described fashion, the resolution service resolves the controlled vocabulary abstract hyperlink (step 56 in Figure 2). For the example set forth above

where a URL is returned for submitting a stock ticker quote request from a service, the
service provider has a template for the stock symbol request from Netscape NetCenter is
http://lookup.netscape.com/lookup/Lookup.tibco?search=<symbol>&d=quote&type=0.
The tag <symbol> in the template is replaced with RHAT by the resolution service to
5   produce the URL that is returned to the user. The service provider 26 then returns a
URL or other content with resolution objects to the user 16 (step 58 in Figure 2).

The controlled vocabulary abstract hyperlink 14 may serve as a type of genre
selector. The "genre" refers to the kind of content being retrieved (e.g. journal articles,
10   database records, books, etc.). For example, an ISBN value and a ticker symbol value
may get resolved using a different set of preferences as they represent two different
genres. The stock ticker symbol may be resolved by a financial service publisher and
the ISBN value may be resolved by a technical journal publisher. Different preferences
may be associated with the use of the respective service providers.
15

As was mentioned above, in some instances, the resolution service to which the
controlled vocabulary abstract hyperlink 14 is passed may not provide content or may
not have any content that satisfies the request encapsulated in the controlled vocabulary
abstract hyperlink 14. The illustrative embodiment provides a mechanism for a second
20   chance for resolving a controlled vocabulary abstract hyperlink 14. Figure 6 is a flow
chart illustrating the steps that are performed in such an instance. Initially, the first
service has no content to return to the user 16 (step 130 in Figure 6). The controlled
vocabulary abstract hyperlink 14 is then returned to the hyperlink redirection facility 22
along with information to identify the service provider that failed to resolve the
25   hyperlink (step 132 in Figure 6). The hyperlink redirection facility 22 then identifies the
next service to utilize (step 134 in Figure 6). The controlled vocabulary abstract
hyperlink is sent to the next service provider (step 136 in Figure 6), and the next service
provider services the request (step 138 in Figure 6). Those skilled in the art will
appreciate that such iterations may go more than two levels deep such that if the second
30   service provider fails, a third service provider is used and if the third service provider
fails a fourth service provider is used, and so on.

The illustrative embodiment also provides a mechanism for performing
advertisement. Figure 7 is a flow chart illustrating the steps that are performed in
35   accordance with this method. Initially, the cookie 68 identifying the number of requests
that have been services by the hyperlink redirection facility for the user is received by
the hyperlink redirection facility (step 140 in Figure 8). The hyperlink redirection

facility 22 extracts this information from the cookie to determine the number of requests
that have been submitted by the user (step 142 in Figure 8). The hyperlink redirection
facility 22 may use a number of different criteria to determine whether to send an
advertisement and if so, what advertisement to send. The hyperlink redirection facility
5   22 may examine the number of times the user has used the hyperlink redirection facility,
when the user last used the hyperlink redirection facility, the identity of the targeted
service, random criteria or other criteria. The hyperlink redirection facility 22 makes a
determination whether to present an advertisement to the user based on the examined
criteria (step 144 in Figure 8). Where a decision is made to send the advertisement, the
10   appropriate information is sent to the user (step 146 in Figure 8). The sending of the
advertisement may entail sending a web page that contains an advertisement to the user.
The advertisement may include both audio and video content. The criteria may also be
used to determine which of multiple advertising choices are sent to the user.

15   While the present invention has been described with reference to an illustrative
embodiment thereof, those skilled in the art will appreciate that various changes in form
and detail may be made without departing from the intended scope of the present
invention as defined in the appended claims.

Claims

1.   In an environment having a redirection facility, a method, comprising the steps of:

5   receiving a user request to access information regarding a semantic value associated with a hyperlink at the redirection facility;

               identifying a user preference regarding which service provider to use to service the request; and

               based on the user preference, directing the request from the redirection
10   facility to a service provider for servicing the request.

2.   The method of claim 1, further comprising the steps of receiving a communication holding information about the user and using this information to identify the user preference.

15

3.   The method of claim 2, wherein the communication comprises a cookie.

4.   The method of claim 1, wherein the redirection server has access to a database holding data regarding preferences of users and wherein the step of identifying the user
20   preference further comprises accessing the database to access the data.

5.   The method of claim 1, wherein the method further comprises the steps of:

               wherein the service provider fails to fully service the request, identifying a second service provider to use to service the request and directing the request
25   from the redirection facility to the second service provider to service the request.

6.   The method of claim 5, wherein the method further comprises the step of identifying the service provider that failed to fully service the request at the redirection facility before the direction of the request to the second service provider.

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7.   The method of claim 1, wherein the redirection facility is run on a dedicated device that supports the TCP/IP protocol suite

8.   The method of claim 7, wherein the device is part of a network.

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9.   In an electronic device, a method, comprising the steps of:

      receiving user information regarding a user and link information regarding a hyperlink to be resolved to a resource in response to the user selecting the hyperlink;

      identifying a resolution service to employ to resolve the hyperlink based on the user information; and

      forwarding at least some of the link information to the identified resolution service for resolution of the hyperlink.

10.   The method of claim 9, wherein the step of receiving user information comprises receiving a cookie.

11.   The method of claim 9, wherein the step of identifying the resolution service comprises accessing data regarding services available to the user and identifying the resolution service based on services available to the user.

12.   The method of claim 9, wherein the electronic device is a computer system.

13.   The method of claim 9, wherein the step of identifying a resolution service comprises soliciting input from the user.

14.   The method of claim 13, wherein the soliciting includes presenting a form for the user to complete.

15.   The method of claim 13, wherein the soliciting includes soliciting for identification of subscription services to which the user subscribes.

16.   The method of claim 9, wherein the method further comprises the steps of:

      where the resolution service fails to return content to the user, identifying a second resolution service to employ to resolve the hyperlink and forwarding at least some of the link information to the second resolution service for resolution of the hyperlink.

17.   The method of claim 16, wherein the method further comprises the step of:

      identifying the resolution service that failed to return content to the user before the forwarding step.

18.   The method of claim 9, wherein content is divisible into genres and wherein the hyperlink contains information regarding to which of the genres the hyperlink is to be resolved.

5   19.   A medium that is readable by an electronic device for use in an environment having a redirection server and holding instructions for performing a method, comprising the steps of:

        receiving a user request to access information regarding a semantic value associated with a hyperlink at the redirection server;

10   identifying a user preference regarding how to service the request; and

        based on the user preference, directing the request from the redirection server to a service provider for servicing the request.

20.   The medium of claim 19, wherein the method further comprises the steps of
15 receiving a communication holding information about the user and using this information to identify the user preference.

21.   The medium of claim 20, wherein the communication comprises a cookie.

20 22.   A medium holding instructions that are executable by an electronic device for performing a method, comprising the steps of:

        receiving user information regarding a user and link information regarding a hyperlink to be resolved to a resource in response to the user selecting the hyperlink;

25   identifying a resolution service to employ to resolve the hyperlink based on the user information; and

        forwarding at least some of the link information to the identified resolution service for resolution of the hyperlink.

30 23.   The medium of claim 22, wherein the step of receiving user information comprises receiving a cookie.

24.   The medium of claim 22, wherein the step of identifying the resolution service comprises accessing data regarding services available to the user and identifying the
35 resolution service based on services available to the user.

25.   A computer-readable medium for use in a computer system and holding computer-executable instructions for performing a method, comprising the steps of:

    receiving a request for a resource, said request originating from a user selecting a hyperlink and said request being redirected to the computer system by an intermediary;

    translating the request into a format that is acceptable to the computer system; and

    servicing the request as translated by returning a resource to the user.

26.   The computer-readable medium of claim 25, wherein the step of servicing the request comprises returning a web page to the user.

27.   In an environment having a redirection facility for redirecting a selected request from a requestor for a given resource to a service provider, a method of advertising, comprising:

    receiving the selected request at the redirection facility;

    examining a criterion at the redirection facility;

    based on the examined criterion, determining whether to present an advertisement to the requestor.

28.   The method of claim 27, wherein the requestor is a user of a computer system.

29.   The method of claim 27, wherein the method further comprises the step of presenting an advertisement to the requestor.

30.   The method of claim 29, wherein the step of presenting an advertisement comprises sending video content over a network from the redirection facility.

31.   The method of claim 30, wherein the step of sending video content comprises sending a web page with an advertisement from the redirection facility to the requestor.

32.   The method of claim 27, wherein the criterion is a random criterion so that the determining is based on a random event.

33.   The method of claim 27, wherein the criterion is when the requestor last received a previous advertisement from the redirection facility.

34.   The method of claim 27, wherein the criterion is how many requests for resources from the requestor have been received at the redirection facility.

ABSTRACT

A controlled vocabulary abstract hyperlink is a variety of hyperlink that is directed to a redirection facility when selected. The hyperlink redirection facility is a redirection facility for directing the controlled vocabulary abstract hyperlink in a modified format to a service provider. The controlled vocabulary abstract hyperlink may be embellished and encapsulated in a "controlled vocabulary abstract hyperlink." The hyperlink redirection facility makes a determination of which service provider to use to service the request associated with the controlled vocabulary abstract hyperlink by examining user preferences, if any. The controlled vocabulary abstract hyperlink is then passed onto a service provider, which translates the request into an appropriate format for a selected service provider that has been identified by the hyperlink redirection facility. The service provider processes the request and returns results to the user.
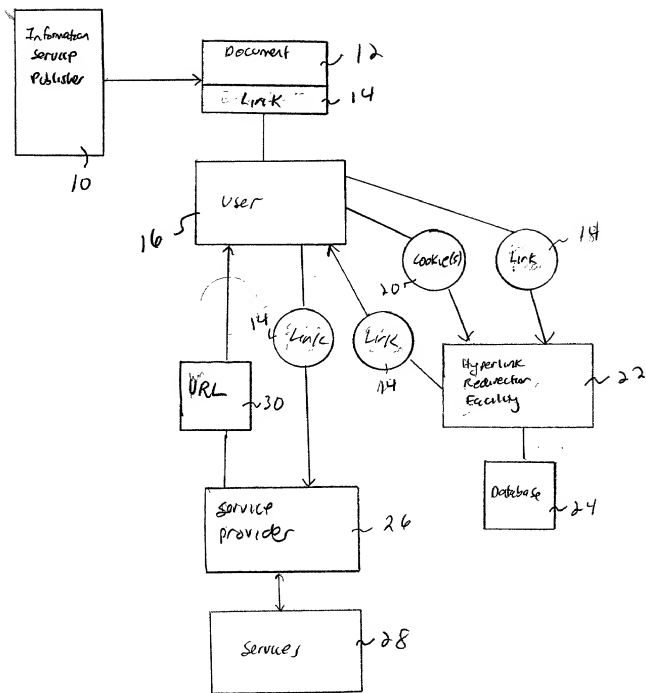
Figure 1
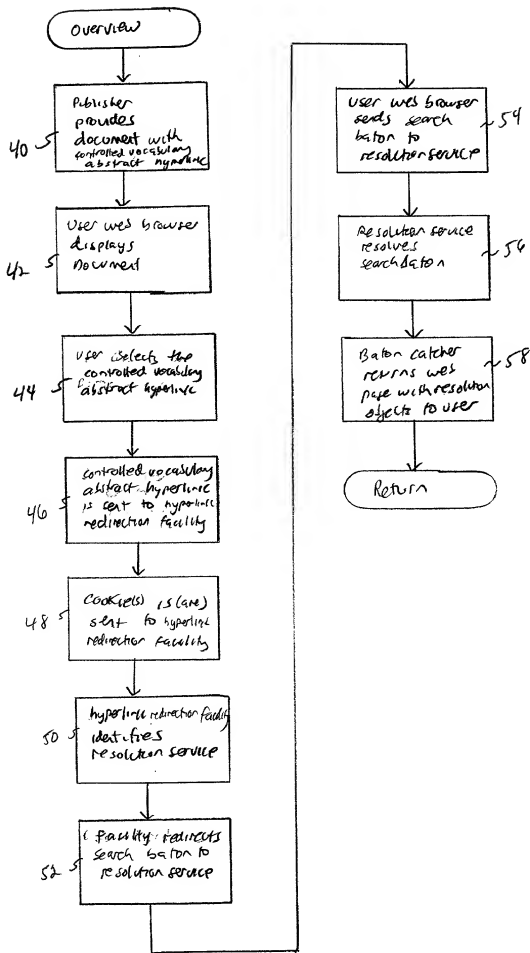
Figure 2

```
<html>
<head>
<title> Example Document </title>
</head>
<body>
Here is   an   example document with a
60~<a   href = "http://think.openly.com/servlet/Search Baton? stockSymbol=
62~   rhat"> RHAT </a>
</body>
</html>
```

figure 3

User web Browser 64

Cookie = "Netscape Netcenter" 66

Cookie = 7 68

Hyperlink Redirection Facility 22

http://lookup.netscape.com/lookup/Lookup.tiveo?search = RHAT &A = quote &-type = 0 70

Figure 4

User Cookie 92   94   Source material 96   Knowledge Databases 98

Search Baton

Request
Enhancement
Facility   ~ 90

Search Baton
18

Figure 5

```
┌─────────────┐
│   Failure   │
└─────────────┘
        │
        ▼
┌──────────────────┐
│ First service    │
│ has no           │  ~130
│ context to       │
│ return to user   │
└──────────────────┘
        │
        ▼
┌──────────────────────┐
│ Controlled vocabulary│
│ inclusive of hyperlink│
│ is returned to the   │  ~132
│ hyperlink redirection facility│
│ along with identity of service│
│ provider             │
└──────────────────────┘
        │
        ▼
┌──────────────────────┐
│ Hyperlink redirection│
│ facility identifies  │  ~134
│ next service provider│
│ to use               │
└──────────────────────┘
        │
        ▼
┌──────────────────────┐
│ Controlled vocabulary│
│ at next hyperlink    │
│ is sent to next      │  ~136
│ service provider     │
└──────────────────────┘
        │
        ▼
┌──────────────────────┐
│ Next service         │
│ provider sources     │  ~138
│ the request          │
└──────────────────────┘
        │
        ▼
┌─────────────┐
│   Return    │
└─────────────┘
```
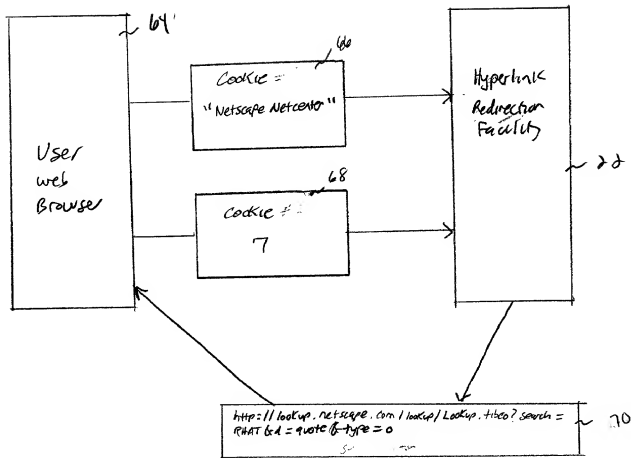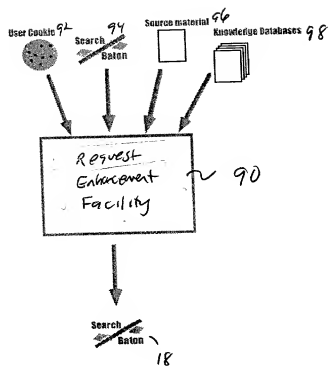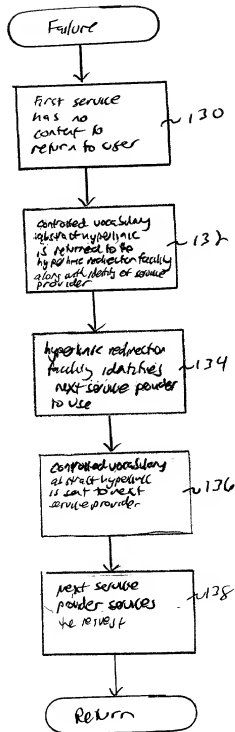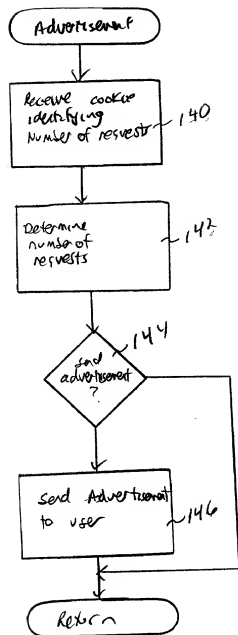
Figure 6

Figure 7

Attorney's
Docket
Number   OIQ-001

Declaration, Petition and Power of Attorney for Patent Application

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

RETRIEVAL OF DIGITAL OBJECTS BY REDIRECTION OF CONTROLLED VOCABULARY SEARCHES

the specification of which

(check one)

 X is attached hereto.

 _ was filed on _____   as

    Application Serial No. _____

    and was amended on _____.
                              (if applicable)

I do not know and do not believe that the subject matter of this application was known or used by others in the United States or patented or described in a printed publication in any country before my invention thereof, or patented or described in a printed publication in any country or in public use or on sale in the United States more than one year prior to the date of this application, or first patented or caused to be patented or made the subject of an inventor's certificate by me or my legal representatives or assigns in a country foreign to the United States prior to the date of this application on an application filed more than twelve months (six months if this application is for a design) before the filing of this application; and I acknowledge my duty to disclose information of which I am aware which is material to the examination of this application, that no application for patent or inventor's certificate on the subject matter of this application has been filed by me or my representatives or assigns in any country foreign to the United States, except those identified below, and that I have reviewed and understand the contents of the specification, including the claims as amended by any amendment referred to herein.

I acknowledge the duty to disclose to the Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, §1.56.

CLAIM OF BENEFIT OF EARLIER FOREIGN APPLICATION(S)

I hereby claim priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below, and have also identified below any foreign application(s) for patent or inventor's certificate filed by me on the same subject matter having a filing date before that of the application(s) from which priority is claimed.

Check one:

  X no such applications have been filed.

  _ such applications have been filed as follows

EARLIEST FOREIGN APPLICATION(S), IF ANY, FILED WITHIN 12 MONTHS
(6 MONTHS FOR DESIGN) PRIOR TO THIS U.S. APPLICATION

Country	Application Number	Date of Filing (month,day,year)	Priority Claimed Under 35 USC 119	
			_ Yes	No _
			_ Yes	No _
			_ Yes	No _
			_ Yes	No _
			_ Yes	No _

ALL FOREIGN APPLICATION(S), IF ANY FILED MORE THAN 12 MONTHS
(6 MONTHS FOR DESIGN) PRIOR TO THIS U.S. APPLICATION

CLAIM FOR BENEFIT OF U.S. PROVISIONAL APPLICATION(S)

I hereby claim the benefit under 35 U.S.C. §119(e) of any United States provisional application(s) listed below.

_____   _____
(Application Serial No.)   (Filing Date)

_____   _____
(Application Serial No.)   (Filing Date)

I hereby claim the benefit under Title 35, United States Code, §120 of any earlier United States application(s) or PCT international application(s) designating the United States listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the earlier application(s) in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose to the Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, §1.56 which became available between the filing date(s) of the earlier application(s) and the national or PCT international filing date of this application. As to subject matter of this application which is common to my earlier application(s), if any, described below, I do not know and do not believe that the same was known or used by others in the United States or patented or described in a printed publication in any country before my invention thereof, or patented or described in a printed publication in any country or in public use or on sale in the United States more than one year prior to the date(s) of said earlier application(s), or first patented or caused to be patented or made the subject of an inventor's certificate by me or my legal representatives or assigns in a country foreign to the United States prior to the date(s) of said earlier application(s) on an application filed more than twelve months (six months if this application is for a design) before the filing of said earlier application(s); and I acknowledge that no application for patent or inventor's certificate on said subject matter has been filed by me or my representatives or assigns in any country foreign to the United States except those identified herein.

(Application Serial No.)	(Filing Date)	(Status) (patented,pending,aband.)

(Application Serial No.)	(Filing Date)	(Status) (patented,pending,aband.)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorneys and/or agents to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

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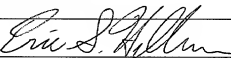
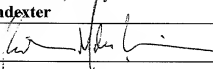Lahive & Cockfield, LLP, 28 State Street, Boston, MA 02109

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Kevin J. Canning, (617) 227-7400

Wherefore I petition that letters patent be granted to me for the invention or discovery described and claimed in the attached specification and claims, and hereby subscribe my name to said specification and claims and to the foregoing declaration, power of attorney, and this petition.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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